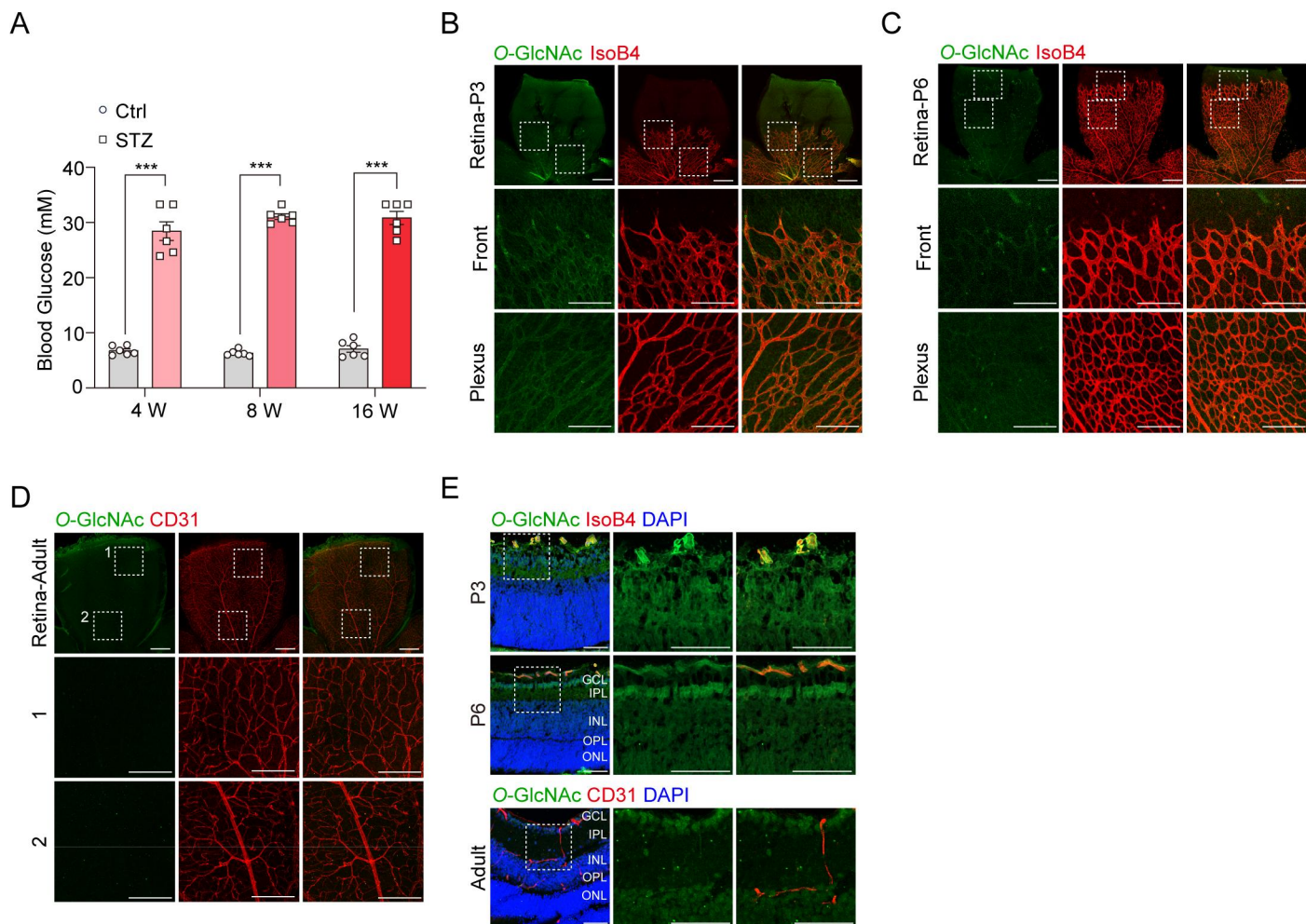


Protein O-GlcNAcylation coupled to Hippo signaling drives vascular dysfunction in diabetic retinopathy



Supplementary Figure 1. The O-GlcNAc-modified protein levels during physiological retinal angiogenesis.

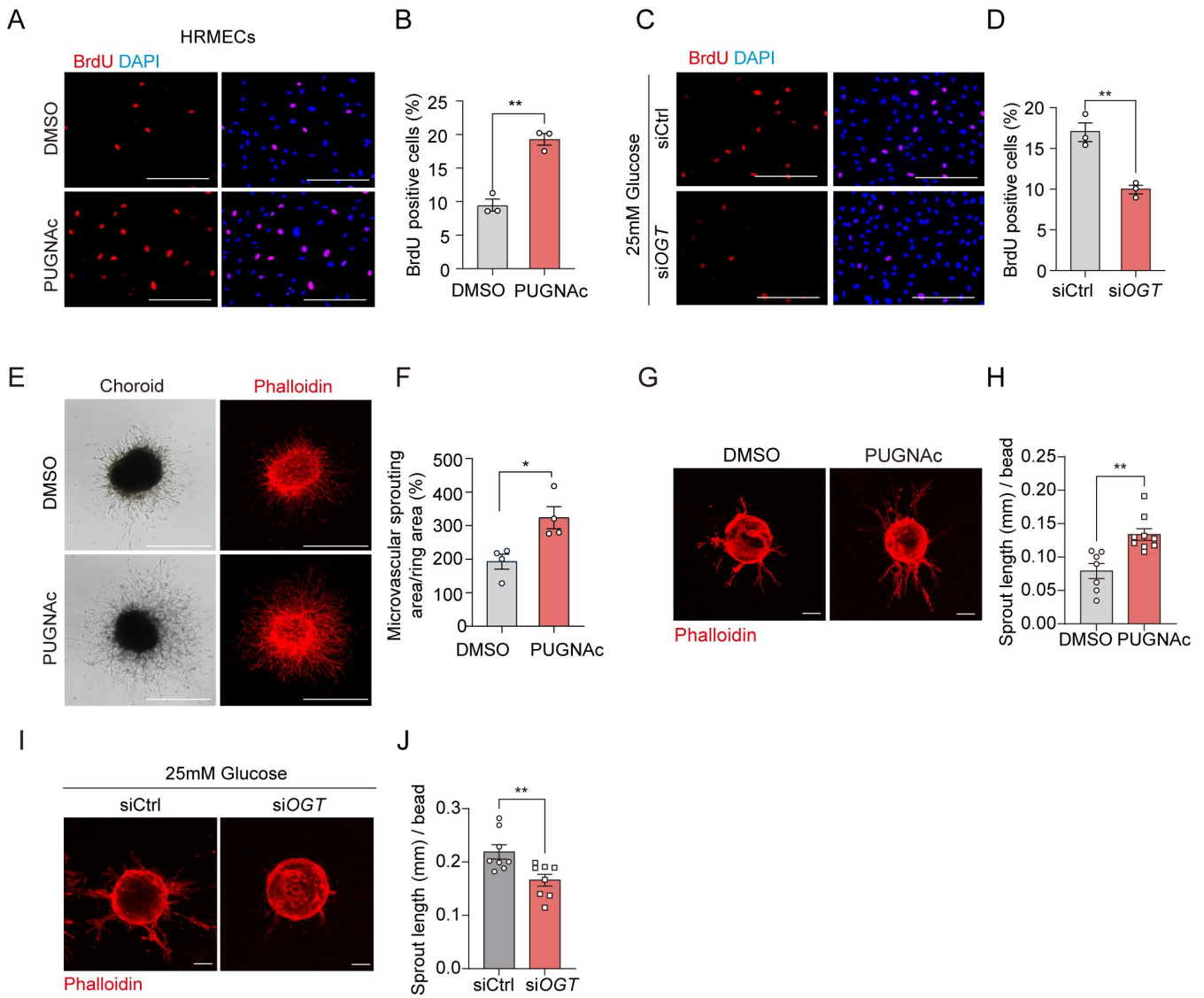
(A) Blood glucose of control mice and mice with diabetes for 4 weeks, 8 weeks, and 16 weeks (n=6/6 mice). Mean $\pm$ SEM, $p < 0.0001$ (two-tailed Student's t-test).

(B and C) Flat-mounted retinas from P3 (B) and P6 (C) pups stained for O-GlcNAc (green) and IsoB4 (red) showing the overall O-GlcNAc-modified protein levels in developing mouse retinal blood vessels. Images are representative from at least 3 mice per condition.

(D) Flat-mounted retinas from adult mice stained for O-GlcNAc (green) and CD31 (red) showing the overall O-GlcNAc-modified protein levels in mature mouse retinal blood vessels (n=3 mice). Images are representative from at least 3 mice per condition.

(E) Immunostaining of O-GlcNAc (green) and IsoB4/CD31 (red) in cross sections of eyeballs from P3 and P6 pups, as well as adult mice (n=3 mice).

*** $p < 0.001$. Scale bars: 500 μ m in (B-D). 30 μ m in (E). Source data are provided as a Source Data file.



Supplementary Figure 2. O-GlcNAcylation regulates sprouting angiogenesis.

(A) BrdU (red) incorporation in HRMECs treated with DMSO or 25 μ M PUGNAc for 24 hr.

(B) Quantification of BrdU⁺ cells as a percentage of the total cell number in (A) (n = 3/3 independent experiments). Mean $\pm$ SEM, p=0.0014 (two-tailed Student's t-test).

(C) BrdU (red) incorporation in HRCECs treated with siCtrl or siOGT for 24 hr.

(D) Quantification of BrdU⁺ cells as a percentage of the total cell number in (C) (n = 3/3 independent experiments). Mean $\pm$ SEM, p=0.0051 (two-tailed Student's t-test).

(E) Representative images of mice choroid explants treated with DMSO or 25 μ M PUGNAc and stained for Phalloidin (red).

(F) Quantification of sprouting area relative to total choroid explant area in (E) (n = 4/4 mice). Mean $\pm$ SEM, p=0.0165 (two-tailed Student's t-test).

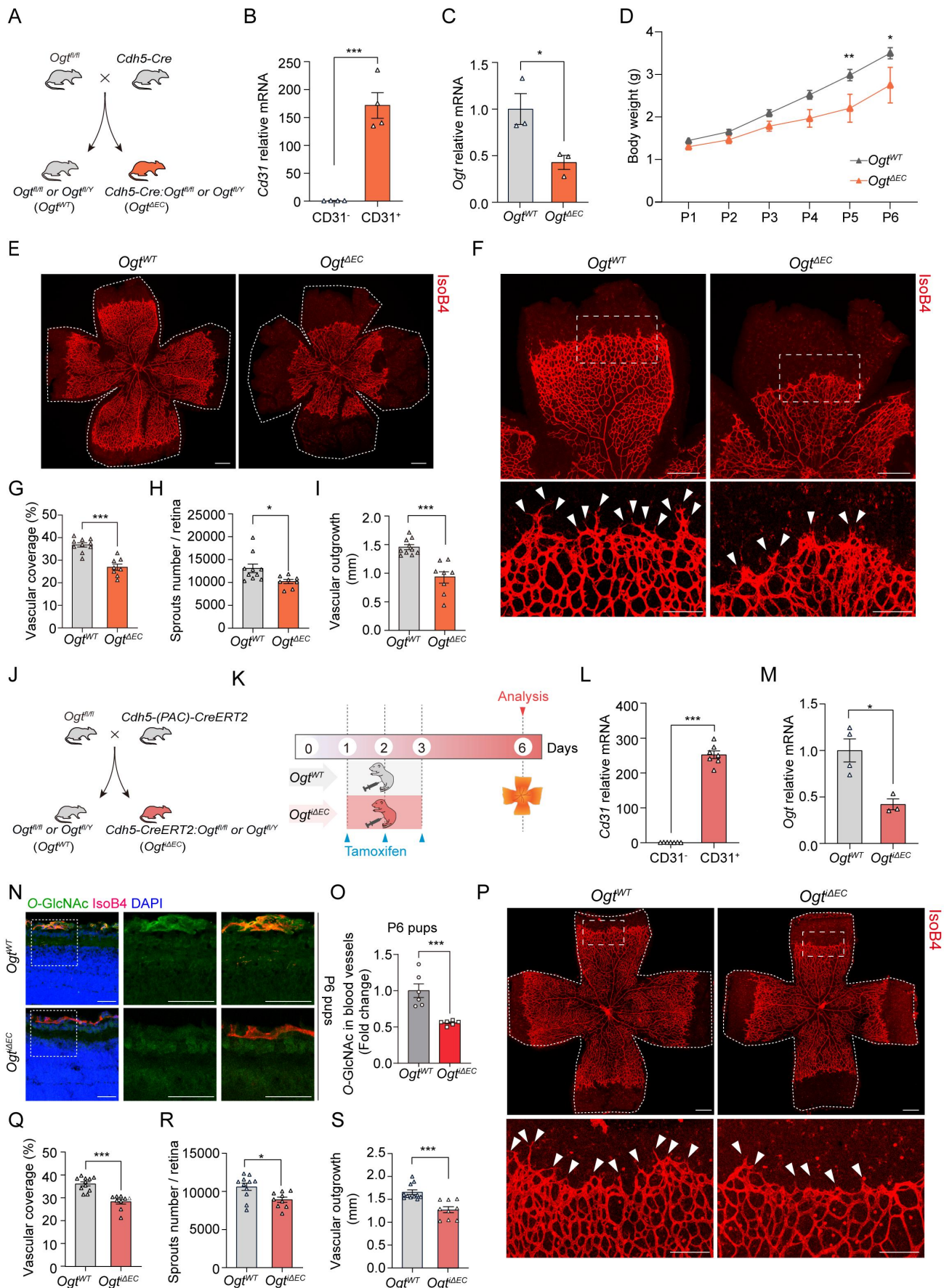
(G) Representative images of bead-sprouting assay using HRCECs treated with DMSO or 25 μ M PUGNAc for 48 hr and stained with Phalloidin (red).

(H) Quantification of bead-sprouting length of (G) (n = 7/9 beads). Mean $\pm$ SEM, p=0.0017 (two-tailed Student's t-test).

(I) Representative images of bead-sprouting assay using HRCECs transfected with siCtrl or siOGT for 48 hr and stained with Phalloidin (red).

(J) Quantification of bead-sprouting length of (I) (n = 8/8 beads). Mean $\pm$ SEM, p=0.0083 (two-tailed Student's t-test).

*p < 0.05, **p < 0.01. Scale bars: 30 μ m in (A), (C), (E), (G), (I). Source data are provided as a Source Data file.



Supplementary Figure 3. Loss of *Ogt* in endothelial cells impairs retinal angiogenesis.

(A) *Ogt^{fl/fl}* mice were crossed with *Cdh5-Cre* mice to generate endothelial cell-specific *Ogt* knockout mice (*Ogt^{ΔEC}*).

(B) qRT-PCR showing *Cd31* mRNA expression in isolated ECs (CD31⁺) compared to CD31⁻ cells from P6 *Ogt*^{WT} and *Ogt*^{ΔEC} pups (n=4 mice per group). Mean ± SEM, p=0.0003 (two-tailed Student's t-test).

(C) qRT-PCR showing *Ogt* mRNA expression in isolated ECs (CD31⁺) from P6 pups (n=3 mice per group). Mean ± SEM, p=0.0347 (two-tailed Student's t-test).

(D) Body weight of P5 to P6 mouse pups showing significant reduction in *Ogt*^{ΔEC} mice (n=5/4 pups). Mean ± SEM, p=0.0057, 0.0177 (two-way ANOVA, Šídák's test).

(E, F) Representative confocal images of flat-mounted retinas from P6 pups stained with IsoB4 (red), white arrowheads indicate vessel sprouts.

(G-I) Quantification of vascular coverage, sprout number, and radial outgrowth from (E) and (F), showing reduction in *Ogt*^{ΔEC} pups (n=10 /8 pups). Mean ± SEM, p<0.0001, p=0.0226, p=0.0001 (two-tailed Student's t-test).

(J) Generation of inducible EC-specific *Ogt* knockout mice (*Ogt*^{ΔEC}) by crossing *Ogt*^{fl/fl} mice with *Cdh5*-(PAC)-*CreERT2* mice.

(K) Tamoxifen administration scheme in *Ogt*^{WT} and *Ogt*^{ΔEC} pups.

(L) qRT-PCR showing *Cd31* mRNA expression in isolated ECs (CD31⁺) compared to CD31⁻ cells from P6 pups (n=7 mice per group). Mean ± SEM, p<0.0001 (two-tailed Student's t-test).

(M) qRT-PCR showing *Ogt* mRNA expression in isolated ECs (CD31⁺) from P6 pups (n=4/3 pups). Mean ± SEM, p=0.0134 (two-tailed Student's t-test).

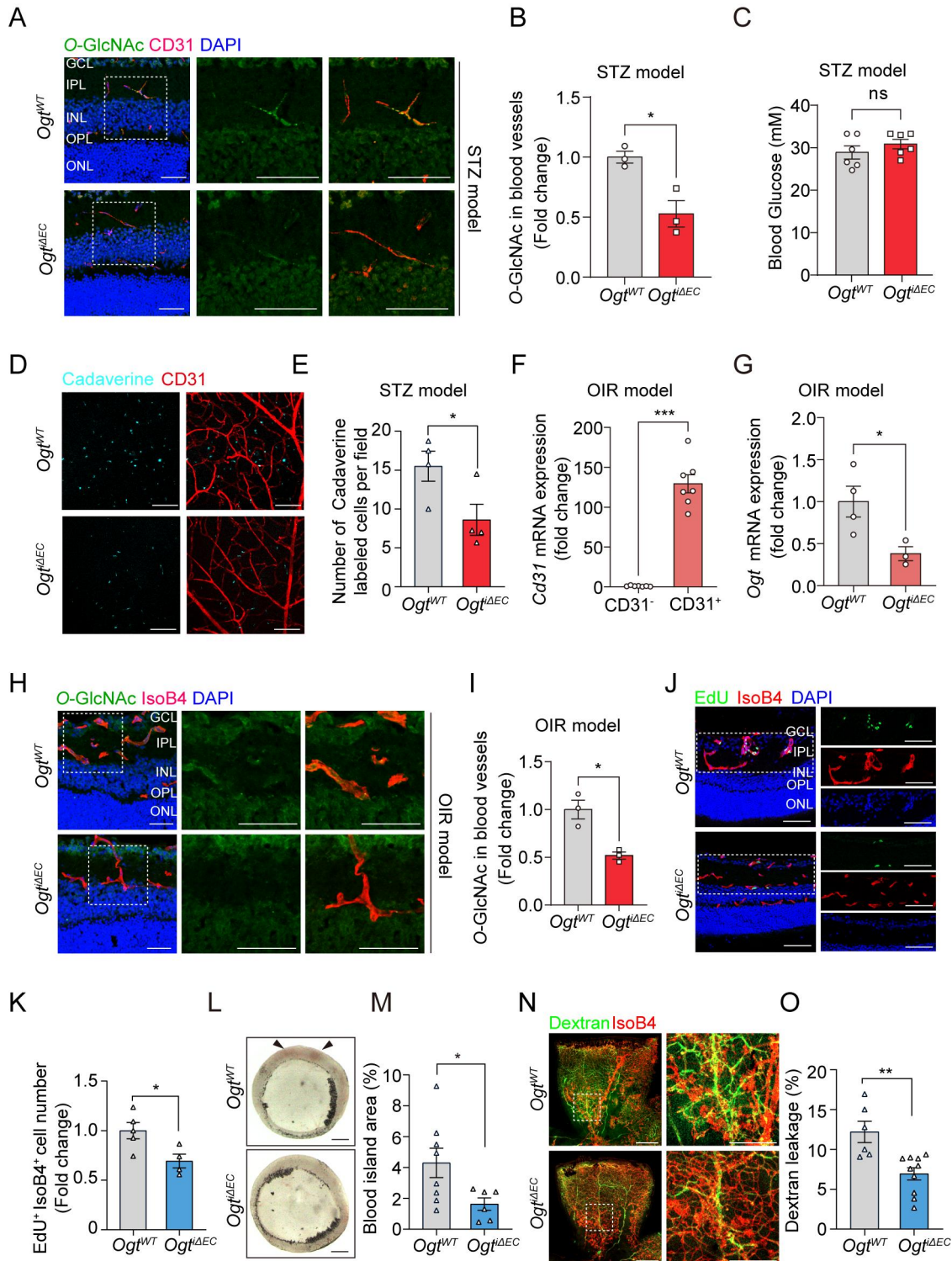
(N) Representative immunostaining images showing O-GlcNAc (green), IsoB4 (red), and DAPI (blue) in retinal sections from P6 pups.

(O) Quantification of O-GlcNAc-modified proteins in retinal vessels (IsoB4⁺ area) from P6 pups (n=6 mice per group). Mean ± SEM, p=0.0009 (two-tailed Student's t-test).

(P) Representative confocal images of flat-mounted retinas from P6 pups stained with IsoB4 (red), with white arrowheads indicating vessel sprouts.

(Q-S) Quantification of vascular coverage, sprout number, and radial outgrowth in *Ogt*^{ΔEC} pups from (P) (n=11/9 mice). Mean ± SEM, p<0.0001, p=0.0118, p=0.0001 (two-tailed Student's t-test).

*P < 0.05; **P < 0.01; ***P < 0.001. Scale bars: 500 μm in (E), (F), (N); 30 μm in (N). Source data are provided as a Source Data file.



Supplementary Figure 4. Endothelial-specific knockout of *Ogt* attenuates vascular dysfunction in DR models.

(A) Representative images of O-GlcNAc (green), CD31 (red) and DAPI (blue) in frozen sections of eyeball from the *Ogt*^{WT} and *Ogt*^{ΔEC} STZ mice.

(B) Quantification of O-GlcNAc-modified protein levels within retinal vessels (CD31⁺ area) in the *Ogt*^{WT} and *Ogt*^{ΔEC} STZ mice (n=3/3 mice). Mean ± SEM, p=0.017 (two-tailed Student's t-test).

(C) Blood glucose of *Ogt*^{WT} and *Ogt*^{ΔEC} mice after 8 weeks of diabetes (n=6/6 mice). Mean ± SEM, p=0.7993 (two-tailed Student's t-test).

(D) Immunofluorescence staining with CD31 (red) and confocal imaging of flat-mounted retina of STZ mice after intravenous Cadaverine-conjugated A555 (cyan) injection.

(E) Quantification of Cadaverine labeled extravasated cells of (D) (n = 4/4 mice). Mean $\pm$ SEM, p=0.0477 (two-tailed Student's t-test).

(F) qRT-PCR showing the expression of *Cd31* mRNA in the isolated EC fraction (CD31⁺) compared with CD31⁻ cells from brains of *Ogt*^{WT} and *Ogt* ^{Δ EC} OIR pups (n = 7/7 mice). Mean $\pm$ SEM, p<0.0001 (two-tailed Student's t-test).

(G) qRT-PCR showing the expression of *Ogt* mRNA in the isolated EC fraction (CD31⁺) from *Ogt*^{WT} and *Ogt* ^{Δ EC} OIR pups (n = 4/3 mice). Mean $\pm$ SEM, p=0.0417 (two-tailed Student's t-test).

(H) Representative images of O-GlcNAc (green), IsoB4 (red) and DAPI (blue) in frozen sections of eyeball from the *Ogt*^{WT} and *Ogt* ^{Δ EC} OIR pups.

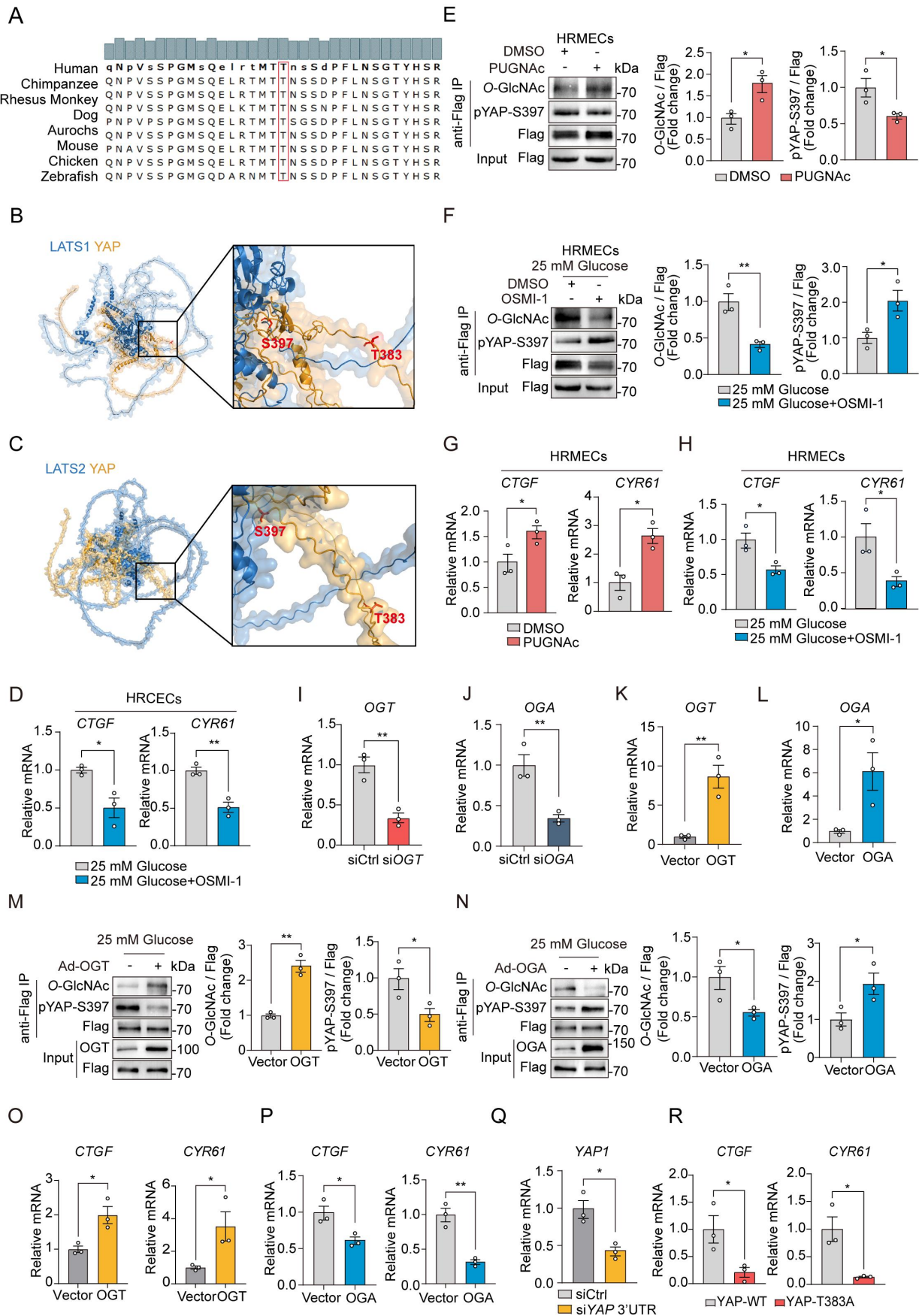
(I) Quantification of O-GlcNAc-modified protein levels within retinal vessels (IsoB4⁺ area) in the *Ogt*^{WT} and *Ogt* ^{Δ EC} OIR pups (n=3/3 mice). Mean $\pm$ SEM, p=0.0102 (two-tailed Student's t-test).

(J and K) Representative confocal images of retina sagittal sections costained with IsoB4 (red) and EdU (green, labels proliferating cells) in *Ogt*^{WT} and *Ogt* ^{Δ EC} OIR pups (J) and quantification (K) of EdU⁺ (green) cells in IsoB4⁺ (red) area (n=5/4 pups). Mean $\pm$ SEM, p=0.0285 (two-tailed Student's t-test).

(L and M) Images of the inner surface of the OIR retinal cup from *Ogt*^{WT} and *Ogt* ^{Δ EC} pups at P17 and quantification of blood island area (n=8/6 pups). Mean $\pm$ SEM, p=0.0411 (two-tailed Student's t-test).

(N and O) Representative confocal images (N) and quantification (O) of extravasated FITC-Dextran (70 kDa, green) and IsoB4 (red) in flat-mounted retinas from *Ogt*^{WT} and *Ogt* ^{Δ EC} OIR pups (n=6/10 pups). Mean $\pm$ SEM, p=0.0023 (two-tailed Student's t-test).

*p < 0.05; **p < 0.01, ***p < 0.001. Scale bars: 30 μ m in (B), (D) and (H), 50 μ m in (J), 1 mm in (L), 500 μ m in (N). Source data are provided as a Source Data file.



Supplementary Figure 5. O-GlcNAcylation inhibits YAP-S397 phosphorylation and activates YAP in retinal ECs.

(A) Alignment of the YAP T383 consensus O-GlcNAcylation motif across species.

(B, C) Structural details of YAP interaction with LATS1/2, showing YAP T383 and S397 sites in red. Structure predictions generated using Alphafold and PyMol.

(D) HRCECs treated with DMSO or OSMI-1 (15 μ M) for 24 hrs under high glucose (25 mM). Relative mRNA levels of *CTGF* and *CYR61* were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0205, p=0.0042 (two-tailed Student's t-test).

(E) HRMECs infected with Ad-Flag-YAP and treated with DMSO or PUGNAc (25 μ M) for 24 hrs. YAP O-GlcNAcylation and pYAP-S397 were quantified (n=3). Mean $\pm$ SEM, p=0.0252, p=0.0427 (two-tailed Student's t-test).

(F) HRMECs infected with Ad-Flag-YAP and treated with DMSO or OSMI-1 (15 μ M) for 24 hrs under high glucose. YAP O-GlcNAcylation and pYAP-S397 were quantified (n=3 independent experiments). Mean $\pm$ SEM, p=0.0088, p=0.0338 (two-tailed Student's t-test).

(G) HRMECs treated with DMSO or PUGNAc (25 μ M) for 24 hrs. *CTGF* and *CYR61* mRNA levels were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0489, p=0.0123 (two-tailed Student's t-test).

(H) HRMECs treated with DMSO or OSMI-1 (15 μ M) for 24 hrs under high glucose. *CTGF* and *CYR61* mRNA levels were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0259, p=0.0414 (two-tailed Student's t-test).

(I, J) HRCECs transfected with siCtrl or siOGT / siOGA and cultured in high glucose. Relative mRNA levels of *OGT/OGA* were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0045, p=0.0098 (two-tailed Student's t-test).

(K, L) HRCECs infected with Ad-Vector or Ad-OGT / OGA for 24 hrs. *OGT / OGA* mRNA levels were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0064, p=0.0337 (two-tailed Student's t-test).

(M) HRCECs infected with Ad-Flag-YAP and Ad-OGT for 24 hrs. YAP O-GlcNAcylation and pYAP-S397 were quantified (n=3 independent experiments). Mean $\pm$ SEM, p=0.0013, p=0.0434 (two-tailed Student's t-test).

(N) HRCECs infected with Ad-Flag-YAP and Ad-OGA for 24 hrs. YAP O-GlcNAcylation and pYAP-S397 were quantified (n=3 independent experiments). Mean $\pm$ SEM, p=0.0431, p=0.047 (two-tailed Student's t-test).

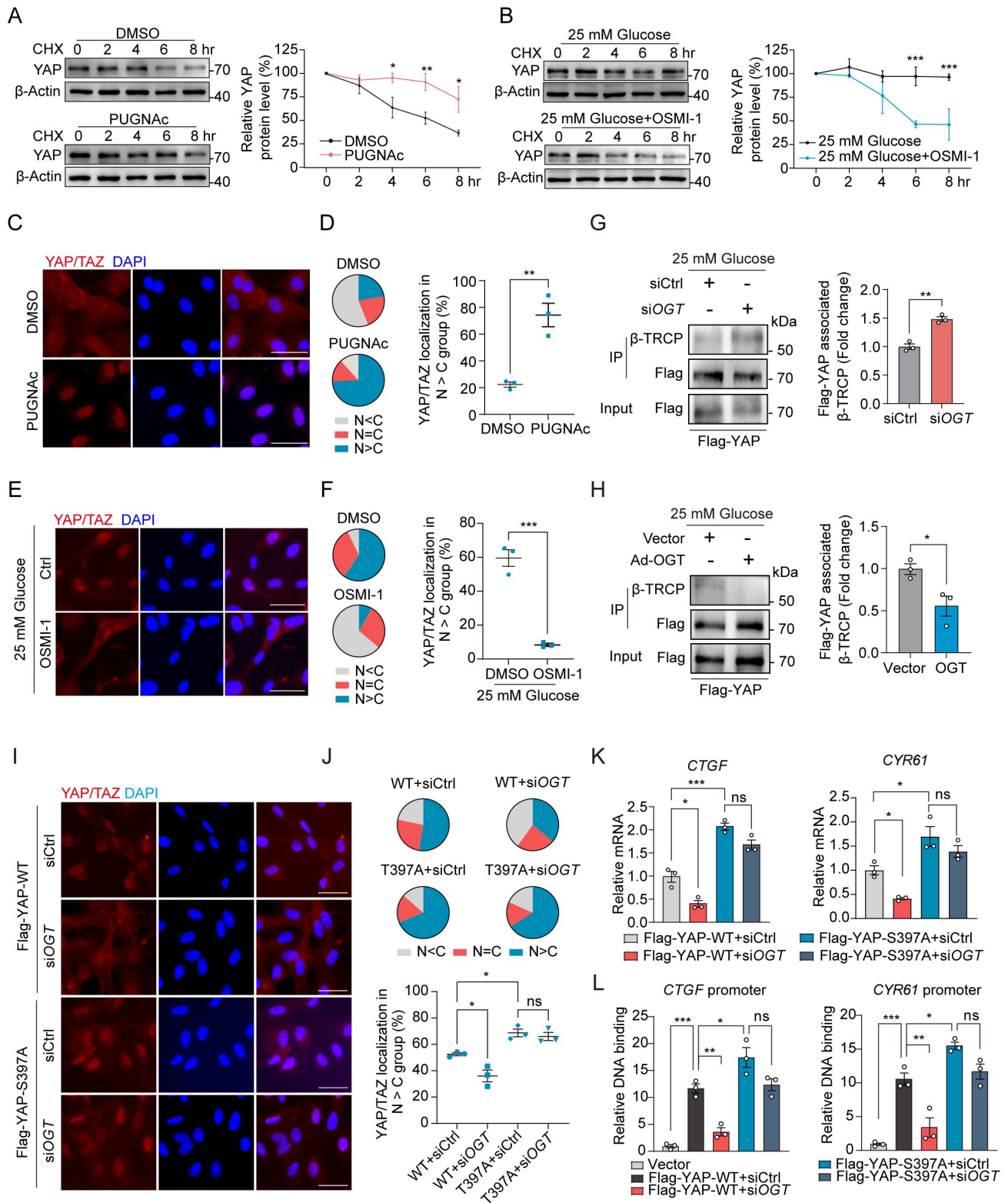
(O) HRCECs infected with Ad-Vector or Ad-OGT for 24 hrs. *CTGF* and *CYR61* mRNA levels were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0207, p=0.049 (two-tailed Student's t-test).

(P) HRCECs infected with Ad-Vector or Ad-OGA for 24 hrs. *CTGF* and *CYR61* mRNA levels were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0244, p=0.0028 (two-tailed Student's t-test).

(Q) HRCECs transfected with control or YAP 3'UTR siRNA. *YAP1* mRNA levels were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0137 (two-tailed Student's t-test).

(R) HRCECs transfected with YAP 3'UTR siRNA, followed by Ad-Flag-YAP-WT or Ad-Flag-YAP-T383A infection. *CTGF* and *CYR61* expression were analyzed (n=3 independent experiments). Mean $\pm$ SEM, p=0.0415, p=0.0176 (two-tailed Student's t-test).

*p < 0.05; **p < 0.01; ***p < 0.001. Source data provided.



Supplementary Figure 6. O-GlcNAcylation affects YAP stability in retinal ECs.

(A) HRCECs were treated with DMSO or 25 μ M PUGNac for 24 hrs, then with 50 μ g/ml CHX and harvested at the indicated times for western blot analysis. YAP protein levels were quantified relative to β -Actin (n=3 independent experiments). Mean $\pm$ SEM, $p=0.0363$, $p=0.0088$, $p=0.0149$ (two-way ANOVA, Šídák's test).

(B) HRCECs treated with DMSO or 15 μ M OSMI-1 for 24 hrs in high glucose, then with 50 μ g/ml CHX and harvested for western blot analysis. YAP protein levels were quantified relative to β -Actin (n=3 independent experiments). Mean $\pm$ SEM, $p<0.0001$ (two-way ANOVA, Šídák's test).

(C, D) Immunofluorescence of YAP/TAZ (red) and DAPI (blue) in HRCECs treated with DMSO or PUGNAc (25 μ M) for 24 hrs. The pie chart represents the subcellular localization of YAP/TAZ, and the dot plot provides a quantification of the ratio of YAP/TAZ localization in N>C group (n=3 independent experiments). Mean $\pm$ SEM, p=0.0044 (two-tailed Student's t-test).

(E, F) Immunofluorescence of YAP/TAZ (red) and DAPI (blue) in HRCECs treated with DMSO or OSMI-1 (15 μ M) in high glucose for 24 hrs. The pie chart represents the subcellular localization of YAP/TAZ, and the dot plot provides a quantification of the ratio of YAP/TAZ localization in N>C group (n=3 independent experiments). Mean $\pm$ SEM, p=0.0005 (two-tailed Student's t-test).

(G) HRCECs infected with Ad-Flag-YAP and transfected with siCtrl or siOGT, cultured in high glucose. β -TRCP-YAP association was analyzed by immunoprecipitation and western blot (n=3). Mean $\pm$ SEM, p=0.0016 (two-tailed Student's t-test).

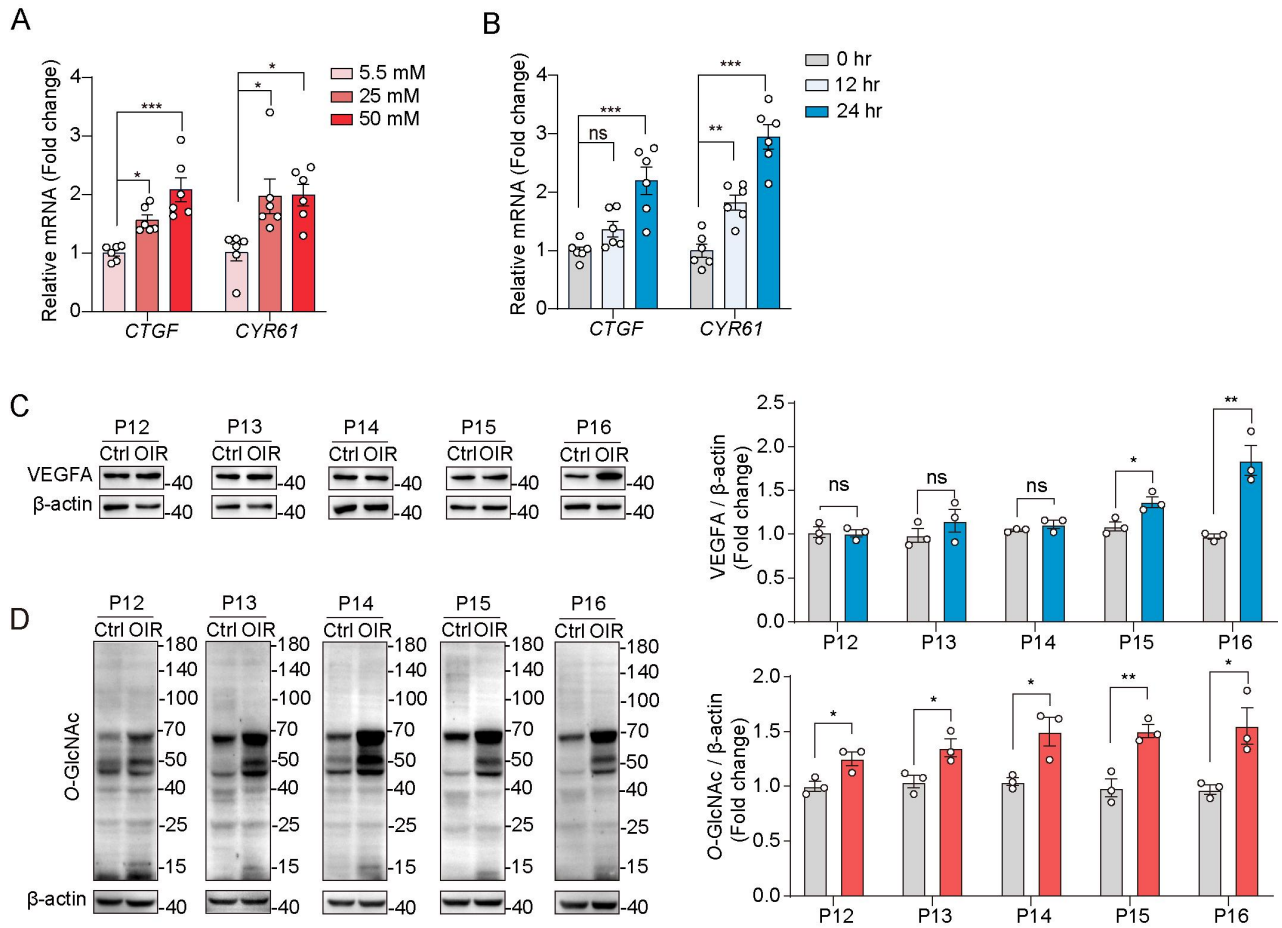
(H) HRCECs infected with Ad-Flag-YAP and Ad-Vector or Ad-OGT, cultured in high glucose. β -TRCP was analyzed by immunoprecipitation and western blot (n=3 independent experiments). Mean $\pm$ SEM, p=0.0312 (two-tailed Student's t-test).

(I, J) HRCECs infected with Ad-Flag-YAP-WT or Ad-Flag-YAP-S397A, then transfected with siCtrl or siOGT, with YAP 3'UTR siRNA to knock down endogenous YAP. Immunofluorescence of YAP (red) and DAPI (blue) was shown, with the pie chart represents the subcellular localization of YAP/TAZ, and the dot plot provides a quantification of the ratio of YAP/TAZ localization in N>C group (n=3 independent experiments). Mean $\pm$ SEM, p=0.0248, p=0.0267 (one-way ANOVA, Tukey's test).

(K) Relative mRNA levels of *CTGF* and *CYR61* in HRCECs treated as in (I) (n=3 independent experiments). Mean $\pm$ SEM, p=0.0103, p=0.0002 (one-way ANOVA, Tukey's test).

(L) ChIP-qPCR in HRCECs transfected with siCtrl or siOGT, then infected with Ad-Vector, Ad-Flag-YAP-WT, or Ad-Flag-YAP-S397A. YAP binding to *CTGF* and *CYR61* promoters was analyzed. Data from 3 biological replicates from one experiment (n=3 independent experiments). Mean $\pm$ SEM, p=0.0003, p=0.0029 (one-way ANOVA, Tukey's test).

*p < 0.05; **p < 0.01; ***p < 0.001. Scale bars: 50 μ m. Source data provided.



Supplementary Figure 7. The timing of VEGFA and O-GlcNAcylation elevation in the OIR model.

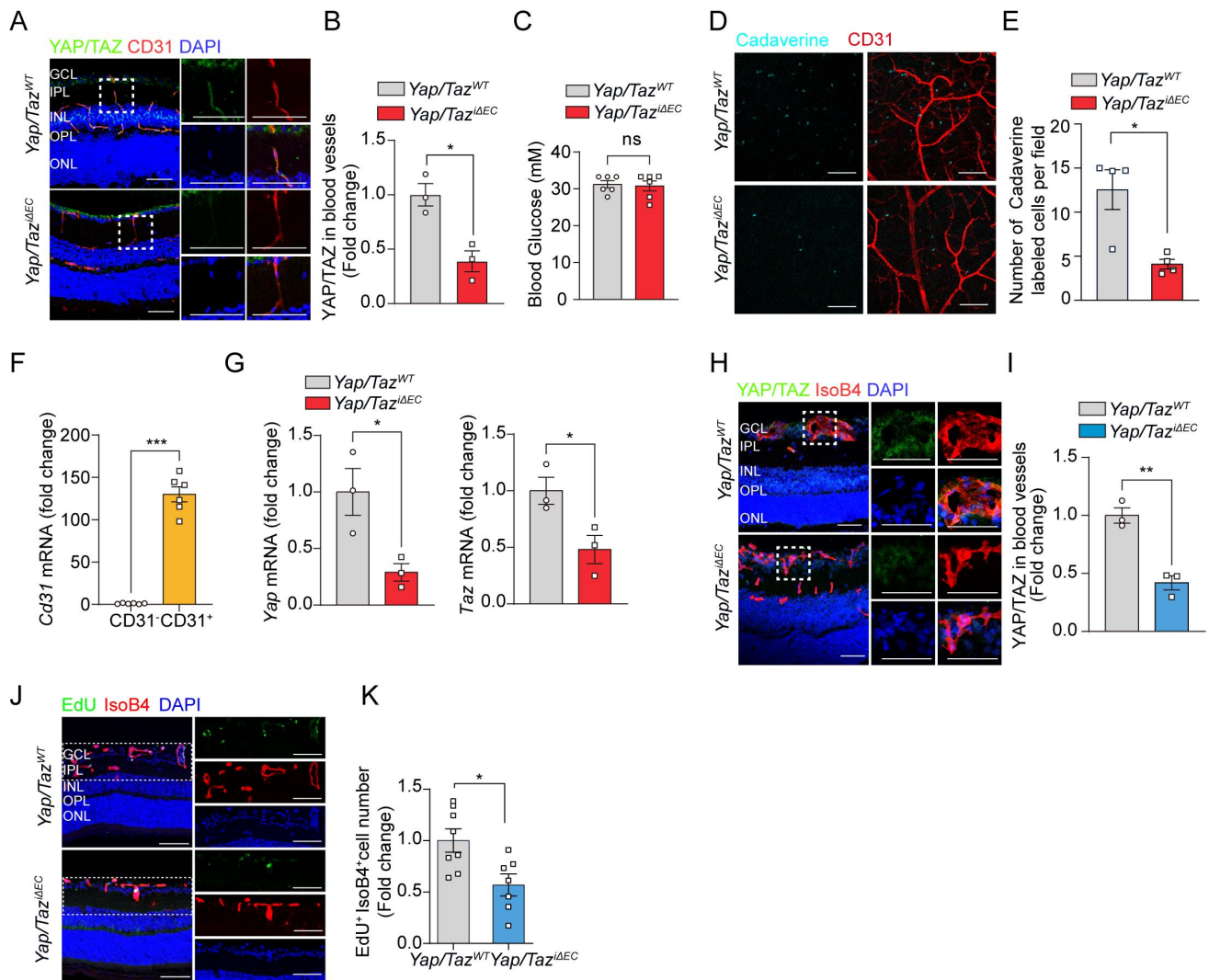
(A) Relative mRNA level of *CTGF* and *CYR61* in HRCECs treated with 5.5, 25 and 50 mM Glucose for 24 hr (n=6/6/6). Mean ± SEM, p=0.0186, <0.0001, p=0.0122, =0.0106(one-way ANOVA, Dunnett's test).

(B) Relative mRNA level of *CTGF* and *CYR61* in HRCECs exposed to hypoxia (1% O₂) for 0, 12 and 24 hr (n=6/6/6). Mean ± SEM, p=0.2145, =0.0002, p=0.0038, <0.0001(one-way ANOVA, Dunnett's test).

(C) Western blot analysis showing the overall levels of VEGFA in the retinas of OIR pups at indicated time points compared to age-matched control pups(n=3/3). Mean ± SEM, p=0.8479, =0.3396, =0.2325, =0.0268, =0.0071 (two-tailed Student's t-test).

(D) Western blot analysis showing the expression levels of O-GlcNAc-modified proteins in the retina of OIR pups at indicated time points compared to age-matched control pups(n=3/3). Mean ± SEM, p=0.0325, =0.0362, =0.027, =0.0071, =0.0275 (two-tailed Student's t-test).

*p < 0.05, **p < 0.01, ***p < 0.001. Source data are provided as a Source Data file.



Supplementary Figure 8. Endothelial-specific knockout of *Yap/Taz* attenuates vascular dysfunction in DR models.

(A) Representative images of YAP/TAZ (green), CD31 (red) and DAPI (blue) in frozen sections of eyeball from *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} STZ mice.

(B) Quantification of YAP/TAZ expression within retinal vessels (CD31⁺ area) in *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} STZ mice (n=3/3 mice). Mean ± SEM, p=0.0123 (two-tailed Student's t-test).

(C) Blood glucose of *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} mice after 8 weeks of diabetes (n=6/6 mice). Mean ± SEM, p=0.7993 (two-tailed Student's t-test).

(D) Immunofluorescence staining with CD31 (red) and confocal imaging of flat-mounted retina of *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} STZ mice after intravenous Cadaverine-conjugated 555 (cyan) injection.

(E) Quantification of Cadaverine extravasation of (D) (n=4/4). Mean ± SEM, p=0.0108 (two-tailed Student's t-test).

(F) qRT-PCR showing the expression of *Cd31* mRNA in the isolated EC fraction (CD31⁺) compared with CD31⁻ cells from brains of *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} OIR pups (n = 6 mice). Mean ± SEM, p<0.0001 (two-tailed Student's t-test).

(G) qRT-PCR showing the expression of *Yap* and *Taz* mRNA in the isolated EC fraction (CD31⁺) from *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} OIR pups (n = 3/3 mice). Mean ± SEM, p=0.0325, =0.0398 (two-tailed Student's t-test).

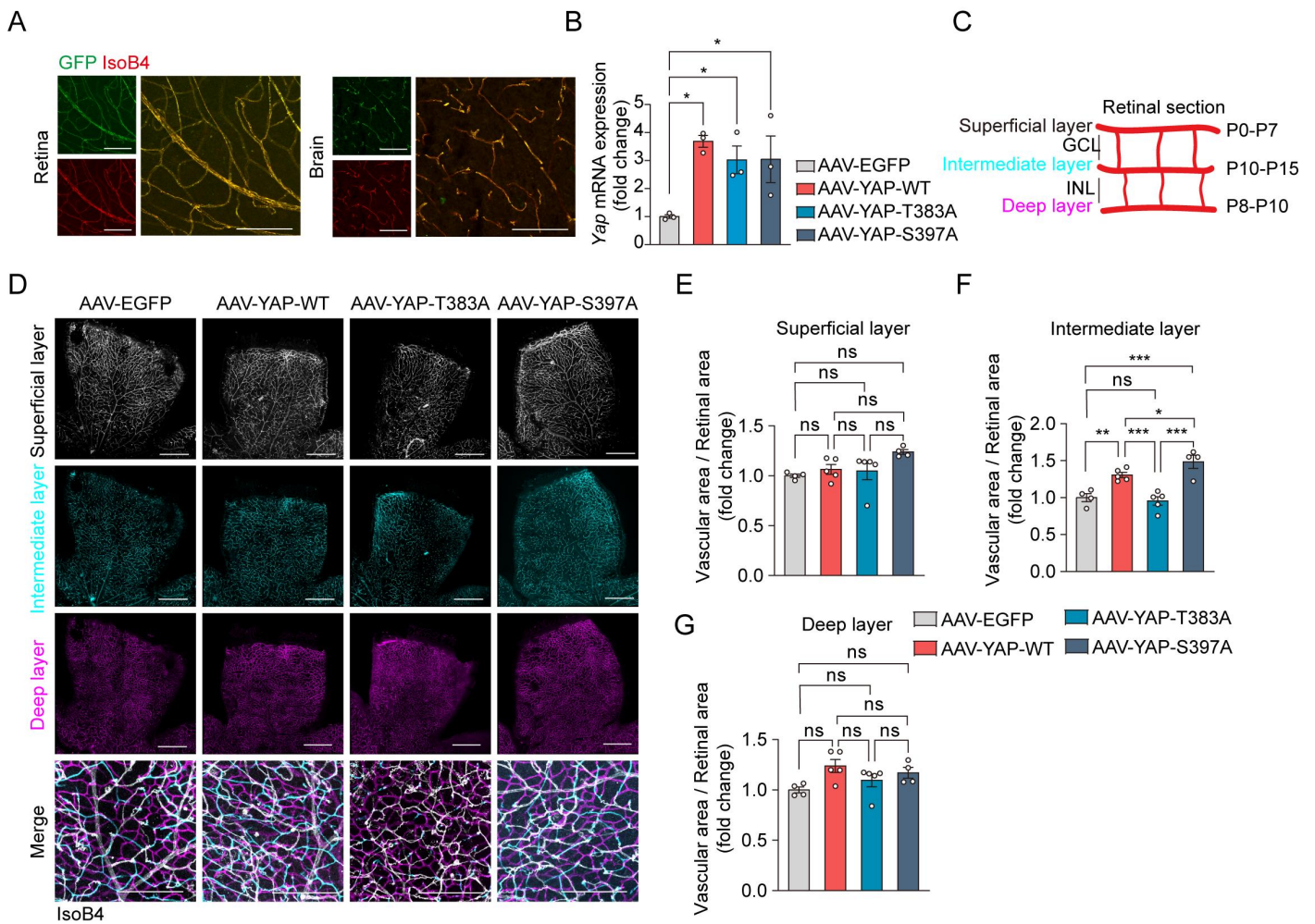
(H) Representative images of YAP/TAZ (green), IsoB4 (red) and DAPI (blue) in frozen sections of eyeball from *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} OIR mice.

(I) Quantification of YAP/TAZ expression within retinal vessels (IsoB4⁺ area) in *Yap/Taz*^{WT} and *Yap/Taz*^{ΔEC} OIR mice (n=3/3 mice). Mean ± SEM, p=0.0012 (two-tailed Student's t-test).

(n=3/3 mice). Mean $\pm$ SEM, p=0.0029 (two-tailed Student's t-test).

(J and K) Representative confocal images of retina sagittal sections costained with IsoB4 and EdU (labels proliferating cells) in *Yap/Taz*^{WT} and *Yap/Taz* ^{Δ EC} pups (J) and quantification (K) of EdU⁺ (green) cells in IsoB4⁺ (red) area (n=8/7 mice). Mean $\pm$ SEM, p=0.0168 (two-tailed Student's t-test).

*p < 0.05, **p < 0.01, ***p < 0.001. Values as mean $\pm$ SEM. Scale bars: 30 μ m in (A), (H) and (J), 50 μ m in (D). Source data are provided as a Source Data file.



Supplementary Figure 9. YAP-T383/S397 axis modulates retinal vascular development.

(A) Representative image from the retina and the brain showing that 10 days after AAV-EGFP retro-orbital injection, GFP (green) expression could be observed in the blood vessels (IsoB4⁺ areas, red).

(B) qRT-PCR showing the expression of *Yap* mRNA in the isolated EC fraction from the brain treated that 10 days after AAV-EGFP, AAV-YAP-WT, AAV-YAP-T383A, AAV-YAP-S397A retro-orbital injection (n=3/3/3/3). Mean $\pm$ SEM, p=0.0127, =0.0495, =0.0472 (one-way ANOVA, Dunnett's test).

(C) Schematic diagram of the development of mouse retinal blood vessel. Superficial layer develops during P0-P7, deep layer develops during P8-P10, and the intermedia layer develops during P10-P15.

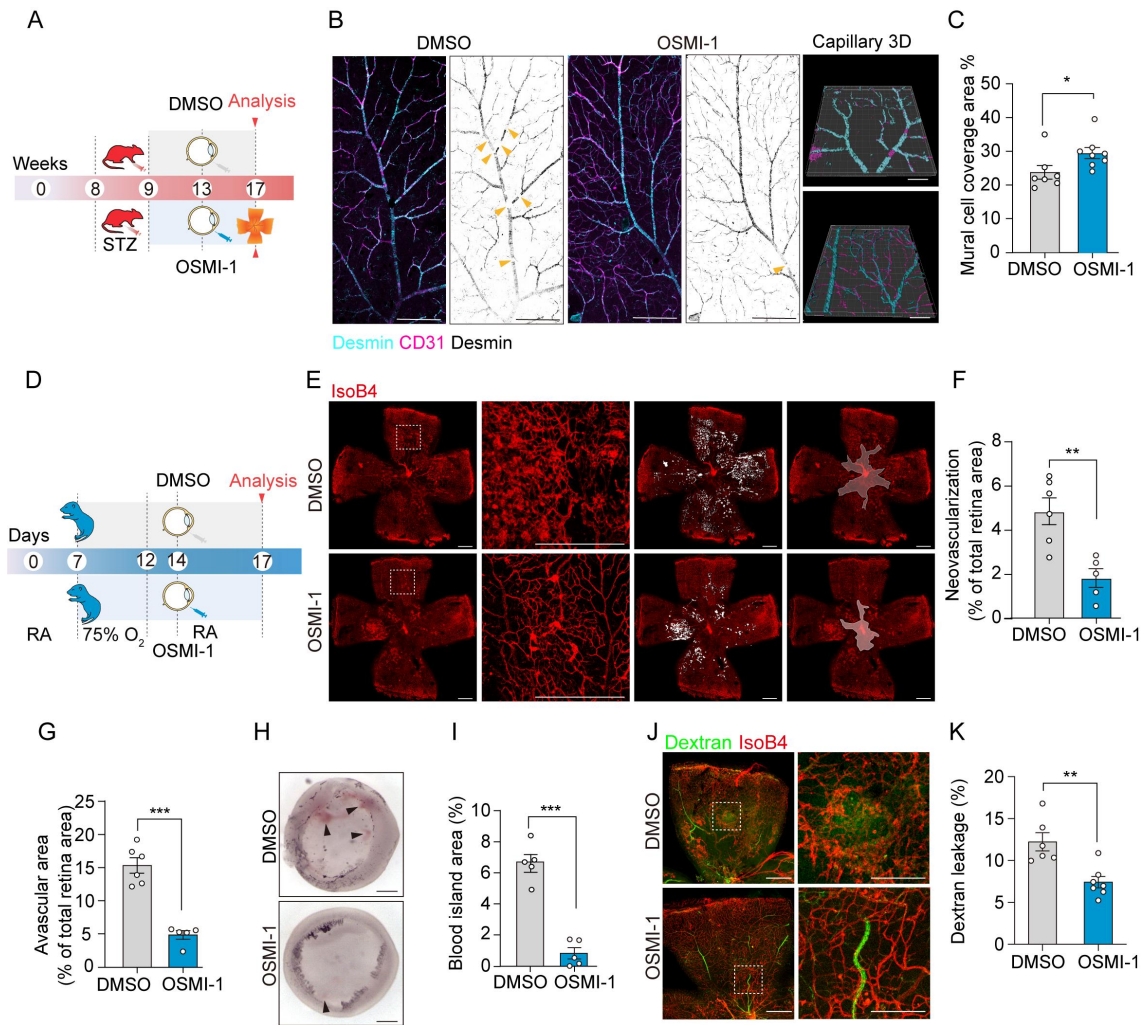
(D) AAV-EGFP, AAV-YAP-WT, AAV-YAP-T383A, and AAV-YAP-S397A were retro-orbitally injected at P3 and the retina were harvest at P13. Representative images of the retina vasculature stained with IsoB4 were shown.

(E) Quantitation of vascular coverage in the superficial layer of retinas of (D) (n=4/5/5/4 pups). Mean $\pm$ SEM, p=0.8643, 0.9531, 0.0067, 0.9969, 0.195, 0.143 (one-way ANOVA, Tukey's test).

(F) Quantitation of vascular coverage in the intermedial layer of retinas of (D) (n=4/5/5/4 pups). Mean $\pm$ SEM, p=0.0041, 0.9214, <0.0001, 0.0007, 0.0446, <0.0001 (one-way ANOVA, Tukey's test).

(G) Quantitation of vascular coverage in the deep layer of retinas of (D) (n=4/5/5/4 pups). Mean $\pm$ SEM, p=0.0518, 0.661, 0.2531, 0.2992, 0.8375, 0.8077 (one-way ANOVA, Tukey's test).

*p < 0.05; **p < 0.01, ***p < 0.001. . Scale bars: 30 μ m in (A), 500 μ m in (D). Source data are provided as a Source Data file.



Supplementary Figure 10. Pharmacologically inhibition of O-GlcNAcylation reduces DR pathology.

(A) Scheme of OSMI-1 treatment in STZ model, employing DMSO as vehicle.

(B) Desmin (cyan) and CD31 (red) staining of vehicle and OSMI-1 treated retinas 9 weeks after the onset of STZ. Arrowheads indicate vessels without mural cell coverage.

(C) Quantification of mural cell coverage area (%) within CD31⁺ vessels area of (B) (n = 7/8 mice). Mean ± SEM, p=0.0434 (two-tailed Student's t-test).

(D) Scheme of OSMI-1 administration in OIR model.

(E) Representative images of the retina vasculature stained with IsoB4 (red) in OIR retinas from DMSO and OSMI-1 injected pups.

(F and G) Quantitation of oxygen-induced retinal neovascularization and avascularization in DMSO and OSMI-1 injected pups (n = 6/5 pups). Mean ± SEM, p=0.0041, <0.0001 (two-tailed Student's t-test).

(H and I) Images of the inner surface of the OIR retinal cup from DMSO and OSMI-1 injected pups (H) and quantification (I) of blood island area (n=5/5 pups). Mean ± SEM, p<0.0001 (two-tailed Student's t-test).

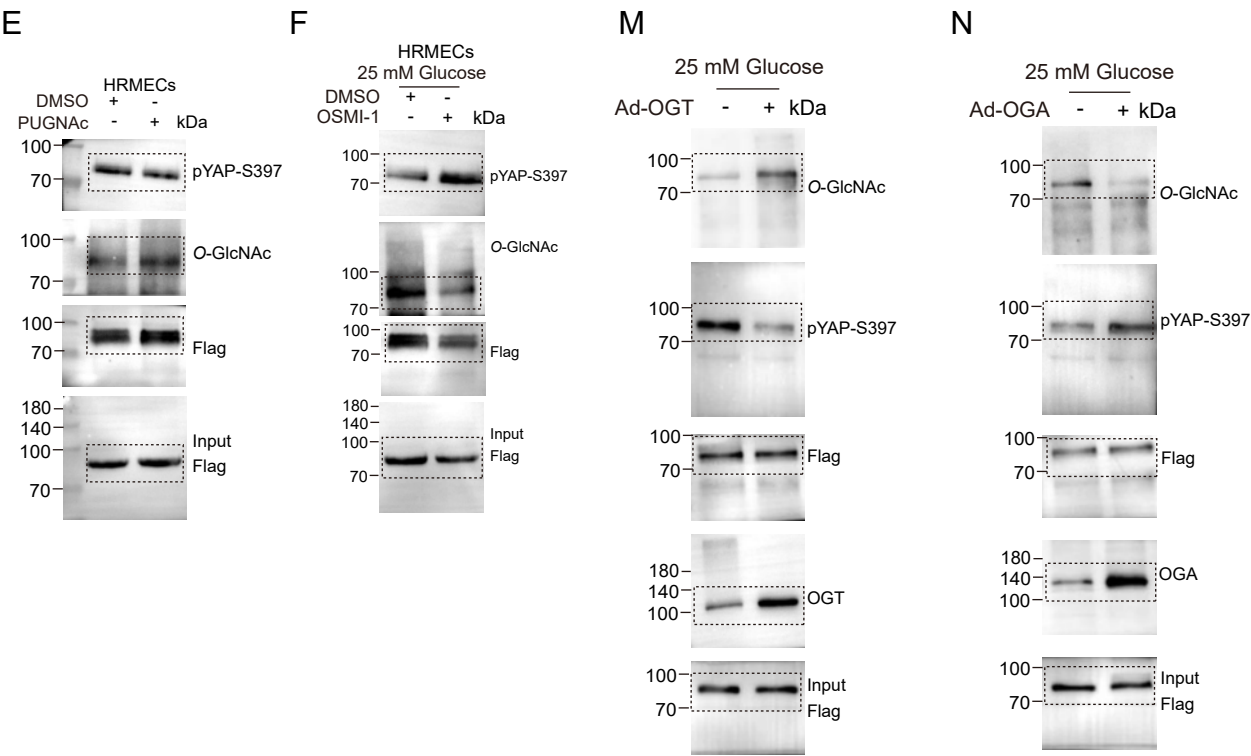
(J and K) Representative confocal images and quantification of extravasated FITC-dextran (70 kDa, green) and IsoB4 (red) in flat-mounted retinas from OIR pups with indicated treatment. FITC-dextran accumulation outside of the blood vessels (FITC-dextran⁺, IsoB4⁻ area) indicate the vessel leakage (n = 6/7 mice). Mean ± SEM, p=0.0026 (two-tailed Student's t-test).

*p < 0.05; **p < 0.01, ***p < 0.001. Scale bars: 500 μm in (E) and (J), 100 μm in (B), 1 mm in (H). Source data are provided as a Source Data file.

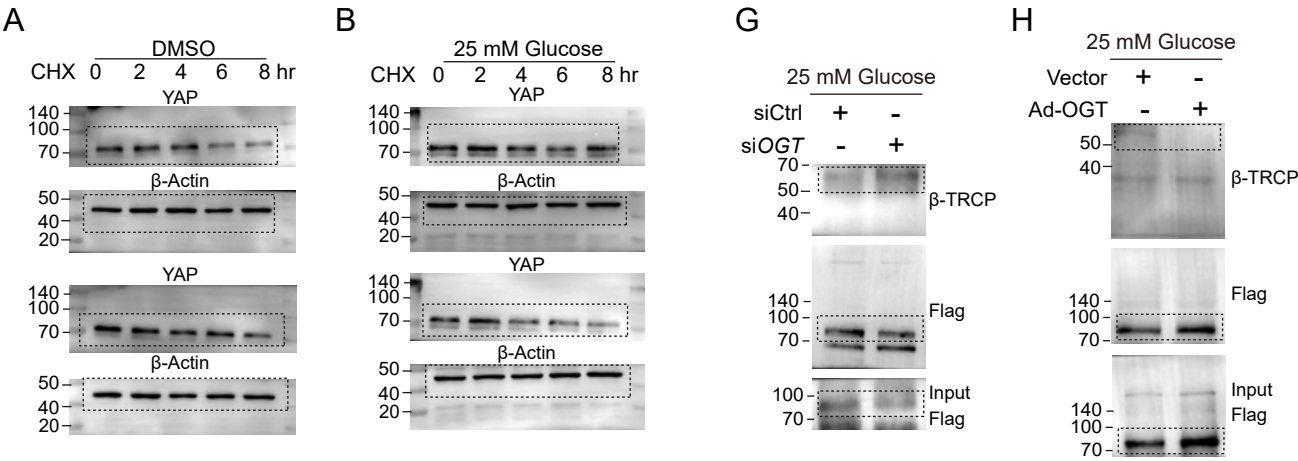
Supplemental Table 1. List of primers for RT- qPCR.

Primers	Forward	Reverse
human <i>CTGF</i>	5'AGCTGACCTGGAAGAGAACA3'	5'CAGGCACAGGTCTTGATGAA3'
human <i>CYR61</i>	5'ATGGTCCCAGTGCTCAAAGA3'	5'CACACTCAAACATCCAGCGT3'
human <i>YAP</i>	5'ACACCGTGCTGCCATTAAAG3'	5'TCAGTACAGAGGGCATCGTA3'
human <i>WWTR1</i>	5'CACCCGGCCTTGATGTTTAT3'	5'TGTGTGGTGTGCTATCAGGT3'
human <i>ATCB</i>	5'CACCAACTGGGACGACAT3'	5'ACAGCCTGGATAGCAACG3'
human <i>OGT</i>	5'TCCTGATTTGTACTGTGTTTCGC3'	5'AAGCTACTGCAAAGTTCGGTT3'
human <i>OGA</i>	5'CTCAGAGGCTGAGAAAATAATGTTGAG3'	5'AAGGGAAGTTGGCAAGGAAAGT3'
mouse <i>Atcb</i>	5'CTCTGGCTCCTAGCACCATGAAGA3'	5'GTAAACGCAGCTCAGTAACAGTCCG3'
mouse <i>Cd31</i>	5'AGCCTAGTGTGGAAGCCAAC3'	5'AGCCTTCCGTTCTCTTGGTG3'
mouse <i>Ogt</i>	5'CATCTCTCCAGCCCCACA AACTG3'	5'GACGAAGCAGGAGGGGAGAGCAC3'

Full unedited gel for Supplementary Fig. 5



Full unedited gel for Supplementary Fig. 6



Full unedited gel for Supplementary Fig. 7

